

CLAIMS:

1. Method for the simultaneous segmentation of multiple or composed objects in an image, wherein a deformable surface model is to be adapted to a first surface of a first object and a second surface of a second object and wherein the deformable surface model comprises a first partial deformable surface model and a
5 second partial deformable surface model, comprising the steps of:
 - (a) applying the first partial deformable surface model describing a structure of the first surface of the first object;
 - (b) applying the second partial deformable surface model describing a structure
10 of the second surface of the second object, wherein the first partial deformable surface model and the second partial deformable surface model have a prescribed spatial relationship corresponding to a spatial relationship of the first object and the second object; and
 - (c) adapting the first partial deformable model to the first surface and the second
15 partial deformable model to the second surface, wherein the prescribed spatial relationship of the first partial deformable surface model and the second partial deformable surface model is used for the adaptation.
2. Method according to claim 1, wherein the spatial relationship of the first
20 partial deformable surface model and the second partial deformable surface model is prescribed by means of an additional edge, which connects a first vertex of the first partial deformable surface model with a second vertex of the second partial deformable surface model.
3. Method according to claim 2, wherein the additional edge is a featureless
25 vertex connection.

4. Method according to claim 1, wherein the first and second partial deformable surface models each comprise a mesh with a plurality of surface elements, further comprising the steps of:
- 5 detecting feature points for the surface elements at the first and second surfaces of the first and second objects; and
- recalculating coordinates of the surface elements of the mesh to represent the feature points.
- 10 5. Method according to claim 4, wherein the recalculation step comprises the steps of:
- minimizing a distance between the feature points and the surface elements; and
- minimizing an internal energy of the first and second partial deformable surface models.
- 15 6. Method according to claim 5, wherein the internal energy comprises an extended internal energy relating to a difference of a length of the additional edge and a distance between the first and second partial deformable models.
- 20 7. Image processing device, comprising:
- a memory for storing a deformable surface model comprising a first deformable surface model and a second deformable surface model and for storing an image depicting a first object and a second object; and
- an image processor for adapting the deformable surface model to a first surface
- 25 of the first object and a second surface of the second object, which processor performs the following operation:
- (a) applying the first partial deformable surface model describing a structure of the first surface of the first object;
- 30 (b) applying the second partial deformable surface model describing a structure

of the second surface of the second object, wherein the first partial deformable surface model and the second partial deformable surface model have a prescribed spatial relationship corresponding to a spatial relationship of the first object and the second object; and

- 5 (c) adapting the first partial deformable model to the first surface and the second partial deformable model to the second surface, wherein the prescribed spatial relationship of the first partial deformable surface model and the second partial deformable surface model is used for the adaptation.

- 10 8. Computer program for an image processing device in accordance with claim 6, for adapting a deformable surface model comprising a first partial deformable surface model and a second partial deformable surface model to a first surface of a first object and a second surface of a second object, comprising the following steps:

- 15 (a) applying the first partial deformable surface model describing a structure of the first surface of the first object;

- (b) applying the second partial deformable surface model describing a structure of the second surface of the second object, wherein the first partial deformable surface model and the second partial deformable surface model have a prescribed spatial relationship corresponding to a spatial relationship of the first object and the second
20 object; and

- (c) adapting the first partial deformable model to the first surface and the second partial deformable model to the second surface, wherein the prescribed spatial relationship of the first partial deformable surface model and the second partial deformable surface model is used for the adaptation.